REMARKS

In response to the Office Action mailed October 29, 2007, Applicant respectfully requests reconsideration. Claims 1-10 were previously pending in this application. By this amendment, claims 1, 5, 6 and 9 have been amended. New claims 11-16 have been added. As a result, claims 1-16 are pending for examination with claims 1 and 9 being independent. No new matter has been added.

Allowable Subject Matter

As a preliminary matter, Applicant notes with appreciation for the indication of allowable subject matter in claims 4 and 10.

Rejections Under 35 U.S.C. §102

The Office Action rejected claims 1-3 and 5-9 under 35 U.S.C. 102(b) as allegedly being anticipated by Shah et al., U.S. Patent 6,148,437 ("Shah"). Applicant respectfully disagrees. In addition, without acceding to the appropriateness of the rejection, Applicant has amended independent claims 1 and 9 to more clearly distinguish over the cited reference.

Claim 1, as amended, recites:

> A method for transmitting digital messages through output terminals of a monitoring circuit integrated to a microprocessor on execution of an instruction sequence by the microprocessor, each digital message being representative of characteristic data stored by the monitoring circuit on detection of a specific event from among several specific events in the execution of the instruction sequence, one of said characteristic data corresponding to an identifier of said specific event, comprising:
>
> comparing characteristic stored data of a specific event with characteristic stored data of a last previously detected specific event corresponding to a same identifier;
>
> if the compared characteristic data are identical, incrementing a repetition counter associated with said specific event; and
>
> if the compared data are different, transmitting a digital message representative of the data characteristic of the specific event and, further, if content of the repetition counter associated with said specific event is different from zero, transmitting a digital message indicating a number of repetitions of the specific event determined by a value of the repetition counter.

On pages 1 and 2, the Office Action states that Shah discloses limitations of claim 1.

Shah is directed to a jump-evaluating trace designator that includes an original instruction processor (not to be confused with a CPU), an instruction emulator, a start-end designator, a trace translator and optimizer, and a backpatch manager. (Shah, col. 2, lines 41-43). Start-end designator 225 designates the starts and ends of traces and creates a temporary record of the control flow of traces. (Shah, Fig. 2; col. 11, lines 10-12). Start-end designator 225 includes jump instruction categorizer 220 and trace evaluator 230. (Shah, Fig. 2; col. 14, lines 1-3). Categorizer 220 determines whether the current original instruction is a jump instruction and, if so, whether it is start-trace or end-trace eligible. (Shah, Fig. 2; col. 14, lines 3-5). Categorizer 220 also determines whether a trace should be terminated because it has become too long. (Shah, Fig. 2; col. 14, lines 5-7). Trace evaluator 230 determines at which instructions to start and end a trace, and records the control flow through the trace. (Shah, Fig. 2; col. 14, lines 7-9).

Shah discusses that trace evaluator 230 determines whether to start a trace and, if a trace is started, at which instruction to end the trace. (Shah, col. 18, lines 12-14). Trace evaluator 230 includes start-trace manager 410 and end-trace manager 420. (Shah, col. 18, lines 20-22). Start-trace manager 410 **increments the start-trace counter for the current target instruction** and compares the incremented count to the current start threshold. (Shah, col. 18, lines 22-25). (Emphasis added). In addition, Shah teaches that "by typically establishing the start-trace threshold at a value greater than one, it is provided that only groups of instructions executed more frequently than once, depending on such value, are translated and optimized." (Shah, col. 4, lines 57-60). Therefore, the start-trace counter for the current target instruction is incremented upon **each** occurrence of the current target instruction. In contrast, claim 1 recites "if the compared characteristic data are identical, incrementing a repetition counter associated with said specific event."

Further, Shah describes that start-trace manager 410 searches the entries of column 902 of instruction data structure 242, as represented in FIG. 9, to find the original instruction record for the current target instruction (the "current target instruction record"). (Shah, col. 18, lines 33-37). Such search typically is conducted **by comparing the unique identifier for the current target instruction with the entries in column** 902. (Shah, col. 18, lines 37-39). (Shah, col. 18, lines 22-25). In contrast, claim 1 recites "comparing characteristic stored data of a specific event with characteristic stored data of a last previously detected specific event corresponding to a

same identifier." Start-trace manager 410 **increments by one the value of start-trace counter** 906 for the current target instruction record (referred to as the "current start-trace counter"). (Shah, col. 18, lines 39-42). In one example of Shah, the value of the entry in field 906C is incremented by one. (Shah, col. 18, lines 47-48). Thus, in Shah, the search typically is conducted by comparing the unique identifier for the current target instruction and value of the start-trace counter is incremented. Therefore, Shah does not teach or suggest "comparing characteristic stored data of a specific event with characteristic stored data of a last previously detected specific event corresponding to a same identifier; if the compared characteristic data are identical, incrementing a repetition counter associated with said specific event," as recited in claim 1.

In this example of Shah, if current start-trace counter 906C is equal to or greater than the value of the current start threshold, then start-trace manager 410 sets trace-mode flag 221 and resets trace-consideration flag 223 to indicate that a trace has been started (Shah, col. 18, lines 57-62). **If there is no match** between the unique identifier of the current original instruction and any entry in column 902, driver 330 in a known manner **creates a new original instruction record** by creating a new row of entries in instruction data structure 242, such as, for example, row N for record N. (Shah, col. 12, lines 43-48). In contrast, claim 1 recites "if the compared data are different, transmitting a digital message representative of the data characteristic of the specific event and, further, if content of the repetition counter associated with said specific event is different from zero, transmitting a digital message indicating a number of repetitions of the specific event determined by a value of the repetition counter."

Shah discusses that to detect an end of a trace, driver 330 determines whether the current original instruction has a unique identifier and whether trace-mode flag 221 is set. (Shah, col. 19, lines 31-33). Driver 330 increments by one **trace instruction counter 1000** that is shown in FIG. 10 of Shah as being the first entry in temporary trace control-flow list 244. (Shah, col. 19, lines 34-37). Shah notes that "[i]t will be understood that any other of a variety of known methods may be used to count the number of instructions in the trace." (Shah, col. 19, lines 38-40). It should be clear that this is different from "if the compared characteristic data are identical, incrementing a repetition counter associated with said specific event," as recited in claim 1.

Shah further discusses, as an example, that categorizer 220 **compares trace instruction counter 1000 to the maximum trace length** value in column F of row 5 that, in illustrative FIG. 8A, is the number "200." (Shah, col. 20, lines 5-7). (Emphasis added). If trace instruction counter 1000 is equal to or greater than this maximum trace length, categorizer 220 transfers control to end-trace manager 420 with an indication, in accordance with any of a variety of known techniques, that the maximum trace length has been reached. (Shah, col. 20, lines 8-12). End-trace manager 420 then resets trace-mode flag 221 to indicate that the current trace is ended. (Shah, col. 20, lines 13-14). End-trace manager 420 searches temporary end-trace jump-instruction counter list 432 to determine if a type 5 jump instruction has previously been encountered in the current trace. (Shah, col. 20, lines 55-58). **If no match is found**, end-trace manager 420 **creates a new record** including a jump-type identifier field 1102 and a jump-type counter field 1104. (Shah, col. 20, lines 62-64). (Emphasis added). In contrast, claim 1 recites "if the compared data are different, transmitting a digital message representative of the data characteristic of the specific event and, further, if content of the repetition counter associated with said specific event is different from zero, transmitting a digital message indicating a number of repetitions of the specific event determined by a value of the repetition counter."

The Office Action states that Shah discloses comparing characteristic stored data of the last two detected specific events corresponding to a same identifier in col. 6, lines 62-65. Claim 1 has been amended to recite "comparing characteristic stored data of a specific event with characteristic stored data of a last previously detected specific event corresponding to a same identifier." In this portion, Shah discloses "the backpatch manager examines a trace after it has been translated to determine if any other previously translated trace has a jump instruction that jumps to the newly translated trace." (Shah, col. 6, lines 62-65). Backpatch manager 250 compares the **backpatched target instruction address** with the entries in column 902 of instruction data structure 242 to find the original instruction record of such backpatched target instruction. (Shah, col. 22, lines 11-14). (Emphasis added). This is different from "comparing characteristic stored data of a specific event with characteristic stored data of a last previously detected specific event corresponding to a same identifier," as recited in claim 1. Moreover, the Office Action then cites to col. 4, line 67 – col. 5, line 3 where Shah allegedly discloses if the compared characteristic are identical, incrementing a repetition counter associated with said specific event. In this portion, Shah discusses that the start-end designator designates a jump

instruction to be the end of the trace **if the number of times that control has passed through it reaches a predetermined end-trace threshold**. (Emphasis added). Thus, in these portions, Shah does not teach "comparing characteristic stored data of a specific event with characteristic stored data of a last previously detected specific event corresponding to a same identifier; if the compared characteristic data are identical, incrementing a repetition counter associated with said specific event," as recited in claim 1.

In view of the above, Shah does not teach or suggest "a method for transmitting digital messages through output terminals of a monitoring circuit integrated to a microprocessor on execution of an instruction sequence by the microprocessor, each digital message being representative of characteristic data stored by the monitoring circuit on detection of a specific event from among several specific events in the execution of the instruction sequence, one of said characteristic data corresponding to an identifier of said specific event, comprising: comparing characteristic stored data of a specific event with characteristic stored data of a last previously detected specific event corresponding to a same identifier; if the compared characteristic data are identical, incrementing a repetition counter associated with said specific event; and if the compared data are different, transmitting a digital message representative of the data characteristic of the specific event and, further, if content of the repetition counter associated with said specific event is different from zero, transmitting a digital message indicating a number of repetitions of the specific event determined by a value of the repetition counter," as recited in claim 1.

In view of the foregoing, claim 1 patentably distinguishes over Shah.

Claims 2-8 depend from claim 1 and are allowable for at least the same reasons.

Accordingly, withdrawal of the rejection of claims 1-8 is respectfully requested.

Claim 9, as amended, recites:

> A device for transmitting digital messages between a monitoring circuit integrated with a microprocessor and an analysis tool, on execution of an instruction sequence by the microprocessor, comprising:
>
> means for detecting a specific event from among several specific events in the execution of the instruction sequence;
>
> means for storing data characteristic of the detected specific event, one of said characteristic data corresponding to an identifier of the specific event;
>
> means for transmitting a digital message representative of the stored characteristic data;

means for comparing the characteristic data of the detected specific event with characteristic data of a last previously detected specific event corresponding to the same identifier; and

means for incrementing a repetition counter associated with said detected specific event and indicating a number of repetitions of the detected specific event when the comparison means provides a signal indicating that the compared characteristic data are identical;

wherein the transmission means is capable of:

transmitting a message representative of the data characteristic of the detected specific event when the comparison means provides a signal indicating that the compared characteristic data are different, and

transmitting a digital message indicating a repetition of the detected specific event when the incrementation means provides a signal indicating that the content of the repetition counter associated with said detected specific event is different from zero.

On pages 4-6, the Office Action states that Shah discloses limitations of claim 9 and cites to the same portions as in the rejection of claim 1. Specifically, the Office Action alleges that, in col. 12, lines 43-48, Shah discloses transmitting a message representative of the data characteristic of the detected specific event when the comparison means provides a signal indicating that the compared characteristic data are different, and transmitting a digital message indicating a repetition of the detected specific event when the incrementation means provides a signal indicating that the content of the repetition counter associated with said detected specific event is different from zero. However, as should be clear from the above discussion in connection with claim 1, Shah does not teach or suggest the above limitation.

In view of the foregoing, claim 9 patentably distinguishes over Shah.

Claim 10 depends from claim 9 and is allowable for at least the same reasons.

Accordingly, withdrawal of the rejection of claims 9 and 10 is respectfully requested.

New Claims

New claims 11-16 have been added to further define Applicant's contribution to the art. Claims 11-16 depend from claim 9 and are allowable for at least the same reasons.

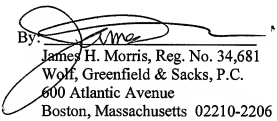
CONCLUSION

A Notice of Allowance is respectfully requested. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Dated: February 29, 2008

Respectfully submitted,



By: _____

James H. Morris, Reg. No. 34,681
Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, Massachusetts 02210-2206
Telephone: (617) 646-8000